

Remarks

The Office action dated April 7, 2008 has been received and carefully noted. The above amendments and the following remarks are being submitted as a full and complete response thereto.

Claims 22-42 were pending in the application. Claims 37-42 have been withdrawn from consideration. Claims 22-36 were rejected. In this Response, claim 26 is canceled. Furthermore, claims 22 and 27 are amended. Claims 22-25 and 27-42 are now pending in the application.

Claim 22 has been amended to recite the limitations of claim 26, and claim 26 has been canceled. Claim 27 has been amended to recite that the complete solidification temperatures of the first and second metallic materials are identical. This amendment finds support on page 8 of the specification.

Restriction requirement

The Office Action dated April 7, 2008 did not address applicant's arguments regarding the restriction requirement, nor did the Office Action state that the restriction requirement was made final. Applicant respectfully traverses the restriction requirement. Applicant submits that the restriction requirement is improper because one of combination of categories that is considered to have unity of invention is a product and a process specially adapted for the manufacture of said product (37 CFR 1.475 (b) (1), as is claimed in the present application. The Examiner's attention is directed to the MPEP, 1800-97. Applicant respectfully requests that the restriction requirement be withdrawn.

Rejections Under 35 U.S.C. § 112

Claim 27 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter. Specifically, the term "substantially similar" was rejected as indefinite.

Applicant respectfully requests that this rejection be withdrawn with regard to the current claims. The current claims do not recite this term.

Rejections Under 35 U.S.C. § 103

Claims 22-25, 27-28, 32, and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Karasawa et al., U.S. Patent No. 6,440,182 (“Karasawa”) in view of Boo et al., U.S. Patent No. 3,891,901 (“Boe”). The Applicant respectfully traverses this rejection for at least the following reasons.

Claim 22, from which claims 23-25 and 27-42 depend, recite a brazing method wherein the first main constituent is aluminum, the second main constituent is aluminum, and the third main constituent is aluminum, and products made by this method.

Karasawa teaches a method for bonding collector plates to end faces of electrode plates wherein the method uses a solder material made from nickel alloy on a surface of a collector plate, and irradiating an electron beam onto the collector plate causing the solder material to melt (col. 2, lines 4-14). Karasawa also teaches that the nickel solder materials of his invention have melting temperatures of 900° and 950° C (col. 4, lines 2-8). Karasawa neither teaches nor suggests a brazing method wherein the first main constituent is aluminum, the second main constituent is aluminum, and the third main constituent is aluminum, and products made by this method

Boe teaches a method of making capacitors using electrode materials that may be aluminum, wherein the solder material is a “nickel-aluminum deposit consisting essentially of about 50 to about 98 weight percent nickel” (col. 6, lines 7-8), with the preferred range about 75 to about 95 weight percent nickel (col. 6, lines 27-30). Thus, Boe does not teach or suggest a method of brazing with a main constituent of aluminum. Boe notes that a suitable applicator for the nickel-aluminum is a spray gun (col. 7, lines 3-4). Boe also notes that the nickel aluminum material provides a strong bond with the foil electrodes, while the separate metals of nickel and aluminum individually flame sprayed do not (col. 7, lines 51-54). Col. 8, lines 48-61, discloses that it may be advantageous to flame spray a second layer of a solderable electrically conductive metal over the layer of nickel and aluminum to provide a layer which is more readily solderable. This layer should be a metal or metal alloy having a melting point above about 775° C.

Applicant submits that neither Karasawa nor Boe teaches nor suggests a brazing method as recited in claim 22 wherein the first main constituent is aluminum, the second main constituent is aluminum, and the third main constituent is aluminum, and products made by this method. Boe also does not teach or suggest the method of the present invention wherein the

connecting agent melts, and by capillary action comes to wet the different surfaces with which it is in contact.

Applicant therefore respectfully requests that the rejection be withdrawn, and that claims 22-25, 27, 28, 32, and 36 be allowed.

Claims 26 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Karasawa and Booé as applied to claim 22, and further in view of US 2002/0142211 Nakanishi et al. and US 2003/0064242 Wittebrood et al.

Applicant respectfully traverses this rejection with regard to claims 26 and 29 for at least the following reasons.

Karasawa and Booé teach as noted above.

Nakanishi et al teaches a nonaqueous electrolyte secondary cell wherein the collector plate has a two layer structure comprising a copper layer made of copper or an alloy consisting predominantly of copper (abstract).

Wittebrood et al teach a method of manufacturing an aluminum product (a fuel tank in a car) wherein the faces of the peripheral flanges of the two parts are coupled to each other via a separate aluminum joining product having a base substrate of an aluminum alloy comprising silicon in an amount in the range of 2 to 18% by weight, and on the outer surface of the base a deposited layer comprising nickel and a further separately deposited layer on one side of the layer comprising nickel, and the separately deposited layer comprising a metal such that taken together the aluminum base substrate and all layers exterior thereto form a metal filler having a liquidus temperature in the range of 400 to 570 degree C (Wittebrood, abstract). As can be seen in all the Figures of Wittebrood, the method is intended to be used to join materials that are parallel to each other, not those perpendicular to each other, as is the case in the present invention. In addition, the Wittebrood method is used to join pieces that are of substantial thickness, unlike the metallic foil of the first piece of the present invention. Applicant submits that the different desired characteristics and properties of the materials used by Wittebrood do not teach or suggest a solution for the manufacture of electro-technical devices as is taught by the present invention.

Applicant therefore respectfully requests that the rejection be withdrawn, and that claims 26 and 29 be allowed.

Claims 30 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Karasawa and Booे as applied to claim 22, and further in view of Subhasish, International Publication No. WO1999/60323 (“Subhasish”).

Applicant respectfully traverses this rejection with regard to claims 30 and 31 for at least the following reasons.

Subhasish teaches aluminum alloys for use with articles such as heat exchangers, wherein the material requires a combination of machinability, strength, corrosion resistance, and brazeability, (Subhasish, abstract). The particular alloy of Subhasish has aluminum alloy with up to 0.6% silica. However, the connecting agent of the present invention preferably contains 7-13% silica. Applicant submits that Subhasish contains no teaching or suggestion that raising the silica content of the material to that recited in claims 30 and 31 would provide a material that can be used as a connecting agent in the method of the present invention. Further, Subhasish also contains no teaching or suggestion to use such an alloy for the manufacture of electro-technical devices, as is the case in the present invention. The desired characteristics of the materials of Subhasish are machinability, brazeability, strength and corrosion resistance (Subhasish, p.7). Applicant submits that there is no teaching or suggestion to use the alloy of Subhasish for the manufacture of materials for electro-technical devices, wherein such devices have different desired characteristics.

Applicant therefore respectfully requests that the rejection be withdrawn, and that claims 30 and 31 be allowed.

Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karasawa and Booे as applied to claim 22, and further in view of Quick et al., U.S. Patent No. 6,291,806 (“Quick”).

Applicant respectfully traverses the rejection with regard to claims 33 and 34 for at least the following reasons.

Karasawa and Booे are discussed above. Applicant submits that Quick does not teach or suggest a brazing process wherein a first and second piece, which is orthogonal to the first piece, are connected via a connecting agent comprising aluminum. The materials recited in claims 33 and 34 comprise a metallic material in the form of a foil, and a second piece orthogonal to it. The

pieces to be joined in the method of Quick are parallel to each other. The method of Quick uses an article for bonding two work pieces together wherein the article comprises a matrix of metallic fibers randomly oriented to form a pad which is then positioned between the workpieces to be bonded and heat is applied (col. 5, lines 17-29). Applicant submits that the method neither teaches nor suggests a brazing process wherein a first and second piece, which is orthogonal to the first piece, are connected via a connecting agent comprising aluminum.

Applicant therefore respectfully requests that the rejection be withdrawn and that claims 33 and 34 be allowed.

Claim 35 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Karasawa, Boo, and Quick as applied to claim 33, and further in view of Hutton et al., U.S. Patent No. 4,720,311 (“Hutton”).

Applicant respectfully traverses the rejection with regard to claim 35 for at least the following reasons.

All references except Hutton are discussed above. Hutton teaches a method of making camshafts of steel by hardening the lobes after machining and rotating the cams to provide more uniform heating. Applicant submits that the combination of references does not teach or a brazing process wherein a first and second piece, which is orthogonal to the first piece, are connected via a connecting agent comprising aluminum.

Applicant therefore respectfully requests that the rejection be withdrawn, and that claim 35 be allowed.

Conclusion

Claims 22- 47 are currently pending in the application. Applicant has fully responded to each and every objection and rejection in the Office action dated April 7, 2008 and believes that claims 22-47 are in a condition for allowance. Applicant therefore requests that a timely Notice of Allowance be issued in this case.

If the Examiner should require any additional information or believes any issues could be resolved via a telephone interview, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

/Thomas J. Osborne, Jr./

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